

WHAT IS CLAIMED IS:

5

1. An electronic mail terminal device that transmits and receives information through electronic mail, comprising:

10 a communication unit that is connected to a network and performs electronic mail data exchange via the network; and

15 a power-saving control unit that sets the communication unit and said device into a power-saving mode when said device detects that a first power-saving timing condition is satisfied, and cancels the power-saving mode when said device detects that a second power-saving timing condition is satisfied.

20

2. The electronic mail terminal device as claimed in claim 1, wherein:

25 the communication unit is a local area network communication unit that is connected to a local area

2005-10-12 07:06:00

network and performs electronic data exchange via the local area network;

the first power-saving timing condition is that a stand-by state lasts longer than a predetermined
5 period of time; and

the second power-saving timing condition is that an event occurs.

10

3. The electronic mail terminal device as claimed in claim 2, wherein

the power-saving control unit cancels the
15 power-saving mode at predetermined mail fetching intervals so as to fetch electronic mail addressed to said device through the local area network communication unit.

20

4. The electronic mail terminal device as claimed in claim 3, wherein

25 the power-saving control unit cancels the

009070" 2T80T960

power-saving mode of the local area network
communication unit at the predetermined mail fetching
intervals so as to fetch electronic mail addressed to
said device through the local area network communication
5 unit,

where electronic mail has been fetched, the
power-saving control unit canceling the power-saving
mode of said device and outputting electronic mail
information to said device through the local area
10 network communication unit, and

where no electronic mail has been fetched, the
power-saving control unit not canceling the power-saving
mode of said device, and setting the local area network
communication unit back into the power-saving mode after
15 a stand-by state lasts longer than the predetermined
period of time.

20

5. The electronic mail terminal device as
claimed in claim 3, wherein the mail fetching intervals
can be set at will.

25

09610812.070600

6. The electronic mail terminal device as claimed in claim 3, wherein the mail fetching intervals have a different value set in each time zone.

5

7. The electronic mail terminal device as claimed in claim 1, wherein:

10

the communication unit is a dial-up communication unit that makes a dial-up access to an Internet service provide via a public network, and performs electronic mail data exchange via the Internet;

15

the first power-saving timing condition is that a stand-by state lasts longer than a predetermined period of time; and

20

the second power-saving timing condition is that an event occurs.

8. The electronic mail terminal device as claimed in claim 7, wherein

25

the power-saving control unit cancels the

009020 21201960

power-saving mode at predetermined mail fetching intervals so as to fetch electronic mail addressed to said device through the dial-up communication unit.

5

9. The electronic mail terminal device as claimed in claim 8, wherein

10 the power-saving control unit cancels the power-saving mode of the dial-up communication unit at the predetermined mail fetching intervals so as to fetch electronic mail addressed to said device,

15 where electronic mail has been fetched, the power-saving control unit canceling the power-saving mode of said device and outputting electronic mail information to said device through the dial-up communication unit, and

20 where no electronic mail has been fetched, the power-saving control unit not canceling the power-saving mode of said device and then setting the dial-up communication unit back into the power-saving mode after a stand-by state lasts longer than the predetermined period of time.

25

005070280T960

10. The electronic mail terminal device as claimed in claim 8, wherein the mail fetching intervals can be set at will.

5

11. The electronic mail terminal device as claimed in claim 8, wherein the mail fetching intervals have a different value set in each time zone.

10

12. A method of controlling an electronic mail terminal device that transmits and receives information through electronic mail, said method comprising the steps of:

15

putting said device and a communication unit, which is connected to a network and performs electronic mail data exchange via the network, into a power-saving mode, when said device detects that a first power-saving timing condition is satisfied; and

20

canceling the power-saving mode when said device detects that a second power-saving timing

25

09610812.070600

condition is satisfied.

5

13. The method as claimed in claim 12,
wherein:

the power-saving mode setting step includes
the step of setting said device and a local area network
10 communication unit, which is connected to a local area
network and performs electronic mail data exchange via
the local area network, into the power-saving mode, when
a stand-by state lasts longer than a predetermined
period of time; and

15 the canceling step includes the step of
canceling the power-saving mode when an event occurs.

20

14. The method as claimed in claim 13,
wherein

the canceling step includes the step of
canceling the power-saving mode at predetermined mail
25 fetching intervals so as to fetch electronic mail

09610812.070600

addressed to said device through the local area network communication unit.

5

15. The method as claimed in claim 14,
wherein

the canceling step includes the step of
canceling the power-saving mode of the local
area network communication unit at the predetermined
mail fetching intervals so as to fetch electronic mail
addressed to said device through the local area network
communication unit,

said method further comprising the steps of:
where electronic mail has been fetched,
outputting electronic mail information to said device
through the local area network communication unit after
canceling the power-saving mode of said device; and

where no electronic mail has been fetched,
setting the local area network communication unit back
into the power-saving mode when a stand-by state lasts
longer than the predetermined period of time, not
canceling the power-saving mode of said device.

25

09610812.070600

16. The method as claimed in claim 14,
wherein the canceling step includes the step of setting
the mail fetching intervals at will.

5

17. The method as claimed in claim 14,
wherein the canceling step includes the step of setting
a different value in each time zone for the mail
fetching intervals.

10

15

18. The method as claimed in claim 12,
wherein:

the power-saving mode setting step includes
the step of setting said device and a dial-up
communication unit, which makes an dial-up access to an
Internet service provider via a public network and
performs electronic mail data exchange via the Internet,
into a power-saving mode, when a stand-by state lasts
longer than a predetermined period of time; and

20
25

the canceling step includes the step of

009070 21801960

canceling the power-saving mode when an event occurs.

5

19. The method as claimed in claim 18,
wherein

the canceling step includes the step of
canceling the power-saving mode at predetermined mail
10 fetching intervals so as to fetch electronic mail
addressed to said device through the dial-up
communication unit.

15

20. The method as claimed in claim 19,
wherein

the canceling step includes the step of
20 canceling the power-saving mode of the dial-up
communication unit at the predetermined mail fetching
intervals so as to fetch electronic mail addressed to
said device,

25

said method further comprising the steps of:
where electronic mail has been fetched,

09610312.070600

outputting electronic mail information to said device through the dial-up communication unit after canceling the power-saving mode of said device; and

where no electronic mail has been fetched,
5 setting the dial-up communication unit back into the power-saving mode when a stand-by state lasts longer than the predetermined period of time, not canceling the power-saving mode of said device.

10

21. The method as claimed in claim 19,
wherein the canceling step includes the step of setting
15 the mail fetching intervals at will.

20

22. The method as claimed in claim 19,
wherein the canceling step includes the step of setting a different value in each time zone for the mail fetching intervals.

25

09610812.070600

23. The electronic mail terminal device as claimed in claim (3) wherein:

the power-saving control unit cancels the power-saving mode of the local area network communication unit at the predetermined mail fetching intervals so as to fetch electronic mail addressed to said device through the local area network communication unit; and

where no electronic mail has been fetched, the power-saving control unit prolongs the mail fetching intervals by a prescribed arithmetic operation.

24. The electronic mail terminal device as claimed in claim 23, wherein:

where electronic mail has been fetched, the power-saving control unit resets the mail fetching intervals to the original predetermined mail fetching intervals.

09610812.070600

25. The electronic mail terminal device as claimed in claim 24, wherein:

where no electronic mail has been fetched, the power-saving control unit prolongs the mail fetching
5 intervals by a prescribed arithmetic operation, not canceling the power-saving mode of said device, and sets the local area network communication unit back into the power-saving mode when a stand-by state lasts longer than the predetermined period of time, and

10 where electronic mail has been fetched, the power-saving control unit cancels the power-saving mode of said device, outputs electronic mail information to said device through the local area network communication unit, and then resets the mail fetching intervals to the
15 original predetermined mail fetching intervals.

20 26. The electronic mail terminal device as claimed in claim 8, wherein:

the power-saving control unit cancels the power-saving mode of the dial-up communication unit at the predetermined mail fetching intervals so as to fetch
25 electronic mail addressed to said device through the

09610812.070600

dial-up communication unit;

where no electronic mail has been fetched, the power-saving control unit prolongs the mail fetching intervals by a prescribed arithmetic operation; and

5 where electronic mail has been fetched, the power-saving control unit resets the mail fetching intervals to the original predetermined mail fetching intervals.

10

27. The electronic mail terminal device as claimed in claim 26, wherein:

15 where no electronic mail has been fetched, the power-saving control unit prolongs the mail fetching intervals by a prescribed arithmetic operation, not canceling the power-saving mode of said device, and sets the dial-up communication unit back into the power-
20 saving mode when a stand-by state lasts longer than the predetermined period of time; and

where electronic mail has been fetched, the power-saving control unit cancels the power-saving mode of said device, outputs electronic mail information to
25 said device through the dial-up communication unit, and

09610812.070600

then resets the mail fetching intervals to the original predetermined mail fetching intervals.

5

28. The electronic mail terminal device as claimed in claim 23, wherein:

where no electronic mail has been fetched, the power-saving control unit prolongs the mail fetching intervals by the prescribed arithmetic operation, and resets the mail fetching intervals to the original predetermined mail fetching intervals at a predetermined time.

15

29. The electronic mail terminal device as claimed in claim 28, wherein:

where no electronic mail has been fetched, the power-saving control unit prolongs the mail fetching intervals by the prescribed arithmetic operation, not canceling the power-saving mode of said device, and then sets the local area network communication unit back into

25

005040.21804960

the power-saving mode when a stand-by state lasts longer than the predetermined period of time;

where electronic mail has been fetched, the power-saving control unit cancels the power-saving mode of said device, and outputs electronic mail information to said device through the local area network communication unit; and

at the predetermined time, the power-saving control unit resets the mail fetching intervals to the original predetermined mail fetching intervals.

30. The electronic mail terminal device as claimed in claim 26, wherein:

where no electronic mail has been fetched, the power-saving control unit prolongs the mail fetching intervals by the prescribed arithmetic operation, and resets the mail fetching intervals to the original predetermined mail fetching intervals at a predetermined time.

09610842-070600

31. The electronic mail terminal device as claimed in claim 30, wherein:

where no electronic mail has been fetched, the power-saving control unit prolongs the mail fetching intervals by the prescribed arithmetic operation, not canceling the power-saving mode of said device, and sets the dial-up communication unit back into the power-saving mode when a stand-by state lasts longer than the predetermined period of time;

where electronic mail has been fetched, the power-saving control unit cancels the power-saving mode of said device, and outputs electronic mail information to said device through the dial-up communication unit; and

at the predetermined time, the power-saving control unit resets the mail fetching intervals to the original predetermined mail fetching intervals.

32. The electronic mail terminal device as claimed in claim 24, further comprising a semiconductor non-volatile memory that stores the mail fetching intervals.

09610812.070600

33. The electronic mail terminal device as claimed in claim 24, wherein the arithmetic operation is selected from a plurality of prescribed arithmetic operations by a user.

5

34. The electronic mail terminal device as claimed in claim 26, further comprising a semiconductor non-volatile memory that stores the mail fetching intervals.

10

15

35. The electronic mail terminal device as claimed in claim 26, wherein the arithmetic operation is selected from a plurality of prescribed arithmetic operations by a user.

20

25

36. The electronic mail terminal device as

09610812.070600

claimed in claim 28, further comprising a semiconductor non-volatile memory that stores the mail fetching intervals.

5

37. The electronic mail terminal device as claimed in claim 28, wherein the arithmetic operation is selected from a plurality of prescribed arithmetic operations by a user.

10

15

38. The electronic mail terminal device as claimed in claim 30, further comprising a semiconductor non-volatile memory that stores the mail fetching intervals.

20

39. The electronic mail terminal device as claimed in claim 30, wherein the arithmetic operation is

25

09610812.070600

selected from a plurality of prescribed arithmetic operations by a user.

5

40. The method as claimed in claim 14,
wherein

the canceling step includes the step of
canceling the power-saving mode of the local area
network communication unit at the predetermined mail
fetching intervals so as to fetch electronic mail
addressed to said device through the local area network
communication unit.

said method further comprising the step of,
where no electronic mail has been fetched, prolonging
the mail fetching intervals by a prescribed arithmetic
operation.

20

41. The method as claimed in claim 40,
further comprising the step of,

where electronic mail has been fetched,

25

09610812.070600

resetting the prolonged mail fetching intervals to the original predetermined mail fetching intervals.

5

42. The method as claimed in claim 14,
wherein

the canceling step includes the step of
10 canceling the power-saving mode of the local area
network communication unit at the predetermined mail
fetching intervals so as to fetch electronic mail
addressed to said device through the local area network
communication unit,

15 said method further comprising the steps of:
where no electronic mail has been fetched,
prolonging the mail fetching intervals by the prescribed
arithmetic operation, not canceling the power-saving
mode of said device, and then setting the local area
20 network communication unit back into the power-saving
mode when a stand-by state lasts longer than the
predetermined period of time; and

where electronic mail has been fetched,
canceling the power-saving mode of said device,
25 outputting electronic mail information to said device

009610812.070600

through the local area network communication unit, and
then resetting the mail fetching intervals to the
original predetermined mail fetching intervals.

5

43. The method as claimed in claim 19,
wherein

10 the canceling step includes the step of
canceling the power-saving mode of the dial-up
communication unit at the mail fetching intervals so as
to fetch electronic mail addressed to said device
through the dial-up communication unit,

15 said method further comprising the steps of:
where no electronic mail has been fetched,
prolonging the mail fetching intervals by a prescribed
arithmetic operation; and

20 where electronic mail has been fetched,
resetting the prolonged mail fetching intervals to the
original predetermined mail fetching intervals.

25

09610812.070600

44. The method as claimed in claim 19,
wherein

the canceling step includes the step of
canceling the power-saving mode of the dial-up
5 communication unit at the mail fetching intervals so as
to fetch electronic mail addressed to said device
through the dial-up communication unit,

said method further comprising the steps of:
where no electronic mail has been fetched,
10 prolonging the mail fetching intervals by a prescribed
arithmetic operation, not canceling the power-saving
mode of said device, and then setting the dial-up
communication unit back into the power-saving mode when
a stand-by state lasts longer than the predetermined
15 period of time; and

where electronic mail has been fetched,
canceling the power-saving mode of said device,
outputting electronic mail information to said device
through the dial-up communication unit, and then
20 resetting the prolonged mail fetching intervals to the
original predetermined mail fetching intervals.

25

00510812.070500

45. The method as claimed in claim 14,
wherein

the canceling step includes the step of
canceling the power-saving mode of the local area
5 network communication unit at the predetermined mail
fetching intervals so as to fetch electronic mail
addressed to said device through the local area network
communication unit,

said method further comprising the steps of:
10 where no electronic mail has been fetched,
prolonging the mail fetching intervals by a prescribed
arithmetic operation; and

at a predetermined time, resetting the
prolonged mail fetching intervals to the original
15 predetermined mail fetching intervals.

20 46. The method as claimed in 14, wherein
the canceling step includes the step of
canceling the power-saving mode of the local area
network communication unit at the predetermined mail
fetching intervals so as to fetch electronic mail
25 addressed to said device through the local area network

09610812.070600

communication unit,

said method further comprising the steps of:

where no electronic mail has been fetched,
prolonging the mail fetching intervals by a prescribed
5 arithmetic operation, not canceling the power-saving
mode of said device, and then setting the local area
network communication unit back into the power-saving
mode when a stand-by state lasts longer than the
predetermined period of time;

10 where electronic mail has been fetched,
canceling the power-saving mode of said device, and
outputting electronic mail information to said device;
and

at a predetermined time, resetting the mail
15 fetching intervals to the original predetermined mail
fetching intervals.

20

47. The method as claimed in 19, wherein
the canceling step includes the step of
canceling the power-saving mode of the dial-up
communication unit at the mail fetching intervals so as
25 to fetch electronic mail addressed to said device

009020-2T80T960

through the dial-up communication unit.

said method further comprising the steps of:

where no electronic mail has been fetched,
prolonging the mail fetching intervals by a prescribed
5 arithmetic operation; and

at a predetermined time, resetting the
prolonged mail fetching intervals to the original
predetermined mail fetching intervals.

10

48. The method as claimed in claim 19,
wherein

15

the canceling step includes the step of
canceling the power-saving mode of the dial-up
communication unit at the mail fetching intervals so as
to fetch electronic mail addressed to said device
through the dial-up communication unit,

20

said method further comprising the steps of:
where no electronic mail has been fetched,
prolonging the mail fetching intervals by a prescribed
arithmetic operation, not canceling the power-saving
mode of said device, and then setting the dial-up

25

communication unit back into the power-saving mode when

009070-21807960

a stand-by state lasts longer than the predetermined period of time;

where electronic mail has been fetched,
canceling the power-saving mode of said device, and
5 outputting electronic mail information to said device
through the dial-up communication unit; and

at a predetermined time, resetting the mail
fetching intervals to the original predetermined mail
fetching intervals.

10

49. The method as claimed in claim 41,
15 wherein the mail fetching intervals are stored in a
semiconductor non-volatile memory.

20

50. The method as claimed in claim 41,
wherein the arithmetic operation is selected from a
plurality of prescribed arithmetic operations by a user.

25

09610812.070600

51. The method as claimed in claim 43,
wherein the mail fetching intervals are stored in a
semiconductor non-volatile memory.

5

52. The method as claimed in claim 43,
wherein the arithmetic operation is selected from a
plurality of prescribed arithmetic operations by a user.

10

53. The method as claimed in claim 45,
wherein the mail fetching intervals are stored in a
semiconductor no-volatile memory.

15

20

54. The method as claimed in claim 45,
wherein the arithmetic operation is selected from a
plurality of prescribed arithmetic operations by a user.

25

09610812-070600

55. The method as claimed in claim 47,
wherein the mail fetching intervals are stored in a
semiconductor non-volatile memory.

5

56. The method as claimed in claim 47,
wherein the arithmetic operation is selected from a
10 plurality of prescribed arithmetic operations by a user.

57. The electronic mail terminal device as
15 claimed in claim 1, wherein:

the communication unit is a local area network
communication unit that is connected to a local area
network and performs electronic mail data exchange via
20 the local area network;

when a current time is within a predetermined
nighttime zone, the power-saving control unit sets the
local area network and said device into the power-saving
mode; and

25 when the current time comes out of the

09610812-070600

predetermined nighttime zone, the power-saving control unit cancels the power-saving mode of the local area network communication unit.

5

58. The electronic mail terminal device as claimed in claim 57, further comprising

10 a nighttime power-saving mode setting unit that determines whether or not a power-saving mode can be set in the predetermined nighttime zone,

wherein:

15 when the current time is within the predetermined nighttime zone, the power-saving control unit sets said device into the power-saving mode;

when the nighttime power-saving mode setting unit allows the power-saving mode in the nighttime zone, the power-saving control unit sets the local area
20 network communication unit into the power-saving mode;
and

when the current time comes out of the nighttime zone, the power-saving control unit cancels the power-saving mode of the local area network
25 communication unit.

09610812.070600

59. The electronic mail terminal device as claimed in claim 57, wherein

the power-saving control unit is provided with a timer for detecting an end of the nighttime zone, and, based on an output of the timer, cancels the power-saving mode of the local area network communication unit.

10

60. The electronic mail terminal device as claimed in claim 1, wherein:

the communication unit is a dial-up communication unit that makes a dial-up access to an Internet service provider via a public network and performs electronic mail data exchange via the Internet;

when a current time is within a predetermined nighttime zone, the power-saving control unit sets the dial-up communication unit and said device into the power-saving mode; and

when the current time comes out of the predetermined nighttime zone, the power-saving control unit cancels the power-saving mode of the dial-up communication unit.

25

09610812:070600

61. The electronic mail terminal device as claimed in claim 60, further comprising

5 a nighttime power-saving mode setting unit that determined whether or not a power-saving mode can be set in the predetermined nighttime zone,

wherein:

when the current time is within the predetermined nighttime zone, the power-saving control unit sets said device into the power-saving mode;

10 when the nighttime power-saving mode setting unit allows the power-saving mode in the nighttime zone, the power-saving control unit sets the dial-up communication unit into the power-saving mode; and

15 when the current time comes out of the nighttime zone, the power-saving control unit cancels the power-saving mode of the dial-up communication unit.

20

62. The electronic mail terminal device as claimed in claim 60, wherein

the power-saving control unit is provided with a timer for detecting an end of the nighttime zone, and,
25 based on an output of the timer, cancels the power-

09610812 070600

saving mode of the dial-up communication unit.

5

63. The method as claimed in claim 12,
wherein:

the power-saving mode setting step includes
the step of setting said device and a local area network
10 communication unit, which is connected to a local area
network and performs electronic mail data exchange via
the local area network, into the power-saving mode, when
a current time is within a predetermined nighttime zone;
and

15

the canceling step includes the step of
canceling the power-saving mode of the local area
network communication unit when the current time comes
out of the predetermined nighttime zone.

20

64. The method as claimed in claim 63,
wherein:

25

the power-saving mode setting step includes

009070-27807960

the steps of:

when the current time is within the
predetermined nighttime zone, setting said device into
the power-saving mode; and

5 when a nighttime power-saving mode setting
unit determines that a power-saving mode can be set in
the nighttime zone, setting the local area network
communication unit into the power-saving mode; and

10 the canceling step includes the step of,
when the current time comes out of the night
time zone, canceling the power-saving mode of the local
area network communication unit.

15

65. The method as claimed in claim 63,
wherein the canceling step includes the step of,
based on an output of a timer that detects an
20 end of the nighttime zone, canceling the power-saving
mode of the local area network communication unit.

25

009070-270600

66. The method as claimed in claim 12,
wherein:

the power-saving mode setting step includes
the step of setting said device and a dial-up
5 communication unit, which makes a dial-up access to an
Internet service provider via a public network and
performs electronic mail data exchange via the Internet,
into the power-saving mode, when a current time is
within a predetermined nighttime zone; and

10 the canceling step includes the step of
canceling the power-saving mode of the dial-up
communication unit when the current time comes out of
the predetermined nighttime zone.

15

67. The method as claimed in claim 66,
wherein:

20 the power-saving mode setting step includes
the steps of:

when the current time is within the
predetermined nighttime zone, setting said device into
the power-saving mode; and

25 when a nighttime power-saving mode setting

009070" 2T80T960

unit determines that a power-saving mode can be set in the nighttime zone, setting the dial-up communication unit into the power-saving mode; and

5 the canceling step includes the step of,
when the current time comes out of the night time zone, canceling the power-saving mode of the dial-up communication unit.

10

68. The method as claimed in claim 66,
wherein the canceling step includes the step of,
15 based on an output of a timer that detects an
end of the nighttime zone, canceling the power-saving mode of the dial-up communication unit.

09610812.070600